Message

From: Fennessy, Christopher [christopher.fennessy@Rocket.com]
Sent: 3/22/2019 5:36:28 PM
To: Keller, Lynn [Keller.Lynn@epa.gov]
Subject: RE: [EXTERNAL] FW: Groundwater and Vapor Monitoring and Response Plan - Continuing discussion of trigger levels

Thanks for forwarding. The groundwater speed is about 1 foot per day, so we would have several months before it would reach the backyards of the homes.

The Glenborough development is very large (2500+ homes) so, for the purposes of this plan, we would break it up into sub communities of about 100 homes. If we reach a trigger level in a groundwater well, we would install another row of groundwater sentinel wells along the next major west-east roadway in the development separating the sub communities. This new row of groundwater sentinel wells would be used to determine if vapor wells need to be placed in the next farther away sub community.

The purpose of the plan is to take action before any of us are concerned that there is a real risk. If we do that, there should not be any reason to collect any samples from the property. I will send a separate email describing this plan.

I got a little lost with the levels in blue below. Are you saying that a plan would need to be prepared at 70ug/m3, the system turned from passive to active at 350ug/m3 and then implement the plan when we hit 670ug/m3?

I will include a conservative proposal in my next email.

Thanks Again! Chris

Sent with BlackBerry Work (www.blackberry.com)

From: "Keller, Lynn" <Keller.Lynn@epa.gov>
Sent: Mar 21, 2019 9:18 AM
To: "Fennessy, Christopher" <christopher.fennessy@Rocket.com>
Subject: [EXTERNAL] FW: Groundwater and Vapor Monitoring and Response Plan - Continuing discussion of trigger levels

Thanks,
Lynn

Lynn M. Keller, EI, CMP
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From: Stralka, Daniel
Sent: Wednesday, March 20, 2019 2:43 PM
To: Keller, Lynn <Keller.Lynn@epa.gov>
Subject: FW: Groundwater and Vapor Monitoring and Response Plan - Continuing discussion of trigger levels

In light blue.

From: Fennessy, Christopher <christopher.fennessy@Rocket.com>
Sent: Monday, March 18, 2019 4:05 PM
To: Keller, Lynn <Keller.Lynn@epa.gov>; ROJAS-MICKELSON, DAEWON <rojas-mickelson.daewon@epa.gov>; jim.rohrer@dtsc.ca.gov; MacDonald, Alex@Waterboards (Alex.MacDonald@waterboards.ca.gov) <Alex.MacDonald@waterboards.ca.gov>; Stralka, Daniel <Stralka.Daniel@epa.gov>; Mitchell, Valerie@DTSC (Valerie.Mitchell@dtsc.ca.gov) <Valerie.Mitchell@dtsc.ca.gov>; 'Myers, Perry@DTSC' <Perry.Myers@dtsc.ca.gov>
Subject: RE: Groundwater and Vapor Monitoring and Response Plan - Continuing discussion of trigger levels

Hi Everyone – Thanks for participating in this morning's call. Based upon our call, we have two scenarios to consider. Both scenarios are essentially the same after Tier 1. Red text in Scenario 2 is different from Scenario 1. In both scenarios, all habitable structures will already have vapor mitigation systems (passive venting with ability to be active).

Scenario 1
Tier 1

- Step 1 - AR would install a row of sentinel groundwater monitoring wells 100 feet upgradient of the Glenborough development approximately 500 feet apart
- Based on the gw speed, how much time would this give before the plume is under the proposed housing?
- Step 2 - AR would monitor these sentinel groundwater monitoring wells quarterly for the first year, then annually thereafter unless the concentration in the sentinel groundwater monitoring well reaches the trigger level
- Step 3 - If the concentration in the sentinel groundwater monitoring well reaches the trigger level, it will be sampled for two more consecutive months to confirm the detection
- If the detection is confirmed in either sample, go to Tier 2
- If the detection is not confirmed, continue quarterly monitoring for three more quarters, then go back to Tier 1, Step 2 (sample for three more quarters, then go back to annual)

Tier 2

- Step 1 – AR would install Community Vapor Monitoring Wells within the community downgradient of the sentinel groundwater monitoring well that triggered Tier 2 and new sentinel groundwater monitoring wells down-gradient of this community ???. The sentinel groundwater monitoring wells would be placed in the Tier 1, Step 2 monitoring program
- Step 2 – AR would monitor these Community Vapor Monitoring Wells quarterly for the first year, then annually thereafter unless the concentration in the well reaches the trigger level
- Step 3 – If the concentration in a Community Vapor Monitoring Well reaches the trigger level, it will be sampled for two more consecutive months to confirm the detection
- If the detection is confirmed in either sample, go to Tier 3
- If the detection is not confirmed, continue quarterly monitoring for three more quarters, then go back to Tier 2, Step 2 (sample for three more quarters, then go back to annual)

Tier 3

- Step 1 – Submit response plan to document steps necessary to prevent continuing vapor concentration increases
- Step 2 – Continue monitoring Community Vapor Monitoring Wells quarterly
- Step 3 – If the concentration in the Community Vapor Monitoring Well hits the next trigger level, implement response plan.

Scenario 2

Tier 1

- Step 1 - AR would install a row of co-located sentinel groundwater monitoring wells and sentinel vapor monitoring wells 100 feet upgradient of the Glenborough development approximately 500 feet apart
- Step 2 - AR would monitor these sentinel groundwater monitoring wells and sentinel vapor monitoring wells quarterly for the first year, then annually thereafter unless the concentration in the sentinel vapor monitoring well reaches the trigger level
- Step 3 - If the concentration in the sentinel vapor monitoring well reaches the trigger level, it will be sampled for two more consecutive months to confirm the detection
- If the detection is confirmed in either sample, go to Tier 2
- If the detection is not confirmed, continue quarterly monitoring for three more quarters, then go back to Tier 1, Step 2 (sample for three more quarters, then go back to annual)

Tier 2

- Step 1 – AR would install Community Vapor Monitoring Wells within the community downgradient of the sentinel vapor monitoring well that triggered Tier 2 and new, co-located sentinel groundwater monitoring wells and sentinel vapor monitoring wells down-gradient of this community (?? Sentinel well or community well? Is the purpose to determine extent?). The sentinel groundwater monitoring wells and sentinel vapor monitoring wells would be placed in the Tier 1, Step 2 monitoring program
- Step 2 – AR would monitor these Community Vapor Monitoring Wells quarterly for the first year, then annually thereafter unless the concentration in the well reaches the trigger level
- Step 3 – If the concentration in a Community Vapor Monitoring Well reaches the trigger level, it will be sampled for two more consecutive months to confirm the detection
- If the detection is confirmed in either sample, go to Tier 3
- If the detection is not confirmed, continue quarterly monitoring for three more quarters, then go back to Tier 2, Step 2 (sample for three more quarters, then go back to annual)

Tier 3

- Step 1 – Submit response plan to document steps necessary to prevent continuing vapor concentration increases
- Step 2 – Continue monitoring Community Vapor Monitoring Wells quarterly
- Step 3 – If the concentration in the Community Vapor Monitoring Well hits the next trigger level, implement response plan.

The vapor mitigation systems that will be required in every new structure, should also have a sus-slab sampling port so that if there is a concern, as in scenario 2, tier 2, potentially first impacted structures can be sampled to determine if the occupants are being exposed.
The trigger levels on Area 40 were a factor of 10 with a passive system and 100 for an active system. Although for TCE we use a HQ=3 which would be lower than the factor of 10 (16-70 ug/m3 as base level, 160-700 ug/m3 with passive system) Trigger levels between the tiers should be a factor of 10. Then confirmation using the soil gas and possibly sub-slab results before actively ventilating the sub-slabs. Focus on implementing response before action levels, maybe 350 ug/m3.
Scenario 2 is preferred with a commitment to respond quickly, months, if the tier 1 trigger levels are reached.

On Thursday, we will attempt to pin down the preferred Scenario and the trigger levels. For trigger levels, EPA has stated that the Area 40 trigger levels are appropriate. These trigger levels are based upon the assumption that the vapor mitigation system provides 2-3 log reduction in concentration (based upon radon data). If we use the low end (2 log), then the concentration we would need to prevent reaching the community would be 1600ug/m3. We would want to ensure additional remedy was in place prior to reaching this concentration. AR proposed using 160ug/m3 as the concentration at which we would have to submit the response plan and some value between 160-1600ug/m3 (maybe 500ug/m3) at which we would have to implement the response so it never reaches 1600ug/m3.

Response from the group on these trigger concentrations has been that without indoor air confirmation samples, the reduction provided by the vapor mitigation systems cannot be relied upon.

Thanks, Chris

Christopher M. Fennessy, P.E.
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-----Original Appointment-----
From: Fennessy, Christopher
Sent: Wednesday, March 06, 2019 9:09 AM
To: Fennessy, Christopher; Keller, Lynn (Keller.Lynn@epa.gov); jim.rohrer@dtsc.ca.gov; MacDonald, Alex@Waterboards (Alex.MacDonald@waterboards.ca.gov); 'Stralka, Daniel (Stralka.Daniel@epa.gov)' (Stralka.Daniel@epa.gov); Mitchell, Valerie@DTSC (Valerie.Mitchell@dtsc.ca.gov)
Cc: rojas-mickelson.daewon@epa.gov
Subject: Groundwater and Vapor Monitoring and Response Plan - Continuing discussion of trigger levels
When: Monday, March 18, 2019 10:00 AM-11:00 AM (UTC-08:00) Pacific Time (US & Canada).
Where: Conference call - See below

1-415-527-5035

Attendee access code: 155 502 85